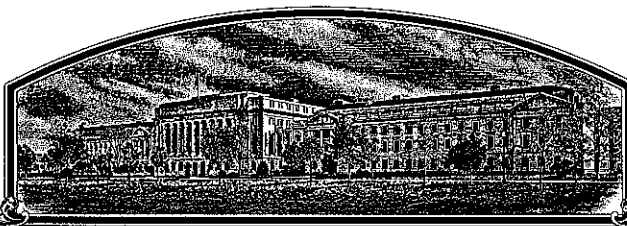


No.

9100025



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Minnesota Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS SEEDS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Kasota'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 30<sup>th</sup> day of September in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

*Kenneth A. Howard*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Edward Madison*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) <b>Minnesota Agricultural Experiment Station</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. <b>M82-106</b>	3. VARIETY NAME <b>Kasota</b>
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) <b>University of Minnesota 220 Coffey Hall 1420 Eckles Avenue St. Paul, MN 55108</b>		5. PHONE (include area code) <b>(612) 625-4211</b>	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER <b>9100025</b> F I L I N G Date <b>Nov. 1, 1990</b> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. F E E S Filing and Examination Fee: <b>\$ 2150.<sup>00</sup></b> Date <b>Nov. 1, 1990</b> Certificate Fee: <b>\$ 250.<sup>00</sup></b> Date <b>August 21, 1992</b>
6. GENUS AND SPECIES NAME <b>Glycine max</b>	7. FAMILY NAME (Botanical) <b>Leguminosae</b>		
8. CROP KIND NAME (Common Name) <b>Soybean</b>	9. DATE OF DETERMINATION <b>November 15, 1989</b>		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) <b>State Experiment Station</b>			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

**J.H. Orf, Department of Agronomy and Plant Genetics  
University of Minnesota, 1991 Buford Circle  
411 Borlaug Hall  
St. Paul, MN 55108**

PHONE (include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety.  
b. ☒ Exhibit B, Novelty Statement.  
c. ☒ Exhibit C, Objective Description of Variety.  
d. ☐ Exhibit D, Additional Description of Variety.  
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.  
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office \_\_\_\_\_  
g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)

☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: \_\_\_\_\_)  
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?

☒ YES (If "YES," give names of countries and dates)  
☒ NO

**February 15, 1990 JH  
23 July 1992**

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) <b>C. Eugene Allen</b>	CAPACITY OR TITLE <b>Director</b>	DATE <b>October 19, 1990</b>
SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE

## Origin and Breeding History of Kasota Soybean

'Kasota' traces to the  $F_4$  progeny of an  $F_3$  plant that was from an  $F_3$  progeny row that traces to an  $F_2$  plant from the cross M73-105 x Vickery. The pedigree breeding procedure was used. M73-105 is a line derived from the cross M68-49 x Clay. M68-49 is a line derived from the cross Evans x M59-120. M59-120 is a line derived from the cross M54-240 x M54-139. M54-240 is a line derived from the cross (Lincoln<sup>2</sup> x Richland) x Korean. M54-139 is a line derived from the cross Renville x Capital. Bulk seed of the  $F_4$  row was designated M82-106 and was used for yield testing in the  $F_5$  (1983). Subsequent yield and agronomic evaluations of strain M82-106 were conducted in the  $F_6$  (1984) and  $F_7$  (1985). In the  $F_7$  generation, 50 typical plants were selected to initiate purification for observable traits including reaction to race 3 of Phytophthora root rot. In the  $F_8$  (1986), M81-106 was entered in the Maturity Group I Preliminary Regional Soybean Test. In 1986, twenty-nine rows were grown for purification purposes. Twenty-two rows appeared uniform for plant and seed characteristics including resistance to race 3 of Phytophthora root rot, therefore, seed of these rows was bulked to provide the breeder's seed. In the  $F_9$  (1987),  $F_{10}$  (1988) and  $F_{11}$  (1989), M82-106 was tested in the Uniform Regional Soybean Test Maturity Group I. In the  $F_9$  (1987), a small increase of breeder's seed was made. In the  $F_{10}$  (1988), foundation seed was produced by the Minnesota Foundation Seeds Organization. The foundation seed produced was shared with other states for increase. In the  $F_{11}$  (1989), seed was increased and M82-106 was approved for release as Kasota. On February 15, 1990, seed of Kasota was released to registered and/or certified growers in Minnesota and South Dakota. No off type variants were noted in the seed multiplication process of Kasota over three generations, thus the variety breeds true and meets certification standards.

9100025

## Exhibit B

## Novelty Statement

<sup>most</sup> <sup>JCS</sup> <sup>23 July 1992</sup>  
 'Kasota' is similar to 'Sibley'. Kasota matures approximately one day later than Sibley, has about three percent higher yield potential and is about two inches shorter. Kasota has smaller seeds than Sibley. Kasota has a better lodging score but a slightly poorer seed quality score than Sibley. The protein content of Kasota is considerably higher than Sibley while the oil content of Kasota is only slightly lower than Sibley. Kasota carries the Rps1c gene for resistance to Phytophthora root rot making it resistant to races 1, 2, 3, 6, 7, 8, 9, 10, 11, 13, 15, 17, 21, 23, 24, and 26 while Sibley has the Rps1 gene for phytophthora root rot resistance making it resistant to races 1, 2, 10, 11, 13, 15, 16, 17, 18, 24 and 27.

Data comparing Kasota and Sibley is taken from Uniform Test I, Northern States 1987-89 (a total of 46 tests for most traits).

Variety	Date mature	Yield bu/ac	Height inches	Lodging score	Seed quality score	Seed size g/100	Oil %	Protein %
Kasota	9/14	42.1	32	1.3	2.1	15.5	21.3	41.1
Sibley	9/13	40.9	34	2.0	1.9	17.1	21.6	39.4

U.S. DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL MARKETING SERVICE  
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
 PLANT VARIETY PROTECTION OFFICE  
 BELTSVILLE, MARYLAND 20705

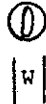
EXHIBIT C  
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY  
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Minnesota Agricultural Experiment Station	TEMPORARY DESIGNATION M82-106	VARIETY NAME Kasota
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) University of Minnesota 220 Coffey Hall, 1420 Eckles Avenue St. Paul, MN 55108		FOR OFFICIAL USE ONLY PVPO NUMBER 9100025

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,  ).

## 1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)  
 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)  
 4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

## 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) \_\_\_\_\_

## 3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

## 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

## 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) \_\_\_\_\_

## 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

## 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

## 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)2 = Type B (SP1<sup>b</sup>)

## 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

## 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) \_\_\_\_\_

## 11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

## 12. LEAF COLOR:

☐ 21 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

## 13. FLOWER COLOR:

☐ 1

1 = White

2 = Purple

3 = White with purple throat

## 14. POD COLOR:

☐ 2

1 = Tan

2 = Brown

3 = Black

## 15. PLANT PUBESCENCE COLOR:

☐ 1

1 = Gray

2 = Brown (Tawny)

## 16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

## 17. PLANT HABIT:

☐ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

## 18. MATURITY GROUP:

☐ 0 ☐ 4

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

## BACTERIAL DISEASES:

☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐ 0Bacterial Blight (*Pseudomonas glycinea*)☐ 0Wildfire (*Pseudomonas tabaci*)

## FUNGAL DISEASES:

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)☐ 0

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 0Powdery Mildew (*Microsphaera diffusa*)☐ 1Brown Stem Rot (*Cephalosporium gregatum*)☐ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

<input type="text" value="0"/>	Pod and Stem Blight ( <i>Diaporthe phaseolorum</i> var; <i>sojae</i> )												
<input type="text" value="0"/>	Purple Seed Stain ( <i>Cercospora kikuchii</i> )												
<input type="text" value="0"/>	Rhizoctonia Root Rot ( <i>Rhizoctonia solani</i> )												
Phytophthora Rot ( <i>Phytophthora megasperma</i> var. <i>sojae</i> )													
<input type="text" value="2"/>	Race 1	<input type="text" value="2"/>	Race 2	<input type="text" value="2"/>	Race 3	<input type="text" value="1"/>	Race 4	<input type="text" value="0"/>	Race 5	<input type="text" value="2"/>	Race 6	<input type="text" value="2"/>	Race 7
<input type="text" value="2"/>	Race 8	<input type="text" value="2"/>	Race 9	<input type="text"/>	Other (Specify) _____								

## VIRAL DISEASES:

<input type="text" value="0"/>	Bud Blight (Tobacco Ringspot Virus)
<input type="text" value="0"/>	Yellow Mosaic (Bean Yellow Mosaic Virus)
<input type="text" value="0"/>	Cowpea Mosaic (Cowpea Chlorotic Virus)
<input type="text" value="0"/>	Pod Mottle (Bean Pod Mottle Virus)
<input type="text" value="0"/>	Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

Soybean Cyst Nematode ( <i>Heterodera glycines</i> )									
<input type="text" value="1"/>	Race 1	<input type="text" value="0"/>	Race 2	<input type="text" value="1"/>	Race 3	<input type="text" value="0"/>	Race 4	<input type="text"/>	Other (Specify) _____
<input type="text" value="0"/>	Lance Nematode ( <i>Hoplolaimus Colombus</i> )								
<input type="text" value="0"/>	Southern Root Knot Nematode ( <i>Meloidogyne incognita</i> )								
<input type="text" value="0"/>	Northern Root Knot Nematode ( <i>Meloidogyne Hapla</i> )								
<input type="text" value="0"/>	Peanut Root Knot Nematode ( <i>Meloidogyne arenaria</i> )								
<input type="text" value="0"/>	Reniform Nematode ( <i>Rotylenchulus reniformis</i> )								
<input type="text"/>	OTHER DISEASE NOT ON FORM (Specify): _____								

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input type="text" value="2"/>	Iron Chlorosis on Calcareous Soil
<input type="text"/>	Other (Specify) _____

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input type="text" value="0"/>	Mexican Bean Beetle ( <i>Epilachna varivestis</i> )
<input type="text" value="0"/>	Potato Leaf Hopper ( <i>Empoasca fabae</i> )
<input type="text" value="0"/>	Other (Specify) _____

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

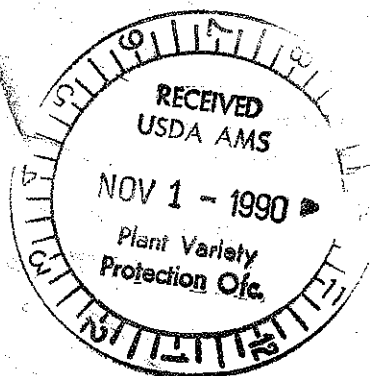
CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Vickery	Seed Coat Luster	Sibley
Leaf Shape	Vickery	Seed Size	Vickery
Leaf Color	Vickery	Seed Shape	Sibley
Leaf Size	Vickery	Seedling Pigmentation	Sibley
			6

## 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
Kasota Submitted	122	1.3	81	9.9	11.7	41.1	21.3	15.5	2.6
Sibley Name of Similar Variety	121	2.0	86	8.8	11.8	39.4	21.6	17.1	2.4

## PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.



9100025

**Exhibit E**

**Statement of the Basis of Ownership**

**The Minnesota Agricultural Experiment Station is the owner of Kasota soybean. The Minnesota Agricultural Experiment Station is the employer of the breeders who developed Kasota.**